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ABSTRACT

This manual provides a model process for the evaluation of instructional computer use by school districts. A framework is provided for the evaluation of what districts are currently doing, and suggestions are made as to who should be involved in the evaluation, what and how to evaluate, when the evaluation should take place, and how long it will take, and explanations are given for why specific parts of the evaluation process are necessary. Finally, the manual focuses on goals and objectives development, and provides information to allow districts to develop reliable long term instructional technology use plans. The process of evaluation is explained in a step-by-step manner, from the planning stages through the implementation of surveys, interviews, and questionnaires to report the development and implementation of recommendations. More than half the document consists of six appendixes, which provide examples of the materials that will be produced for such an evaluation, including goals and objectives, survey and interview questions, a sample report, and templates for the alignment of available MECC (Minnesota Educational Computer Corporation) software with the New York State Syllabi for grades K-12. (EW)

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SCHOOL DISTRICT INSTRUCTIONAL COMPUTER-USE EVALUATION MANUAL

A Process Template

Developed by Chris Morton of the Putnam/Northern Westchester BOCES and Don Beverly of the Lower Hudson Regional Computer Center, Westchester, N.Y.

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SCHOOL DISTRICT INSTRUCTIONAL COMPUTER-USE EVALUATION MANUAL: A PROCESS TEMPLATE

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PREFACE

WHY DID WE DEVELOP THIS MANUAL?

Local, State and National indications are that school districts are looking for help in establishing the validity of what they are doing with technology in their schools. School boards are asking for accountability, and developmental planning (even in the short-term) requires detailed input about what is out there, what the districts are attempting to do with technology, and how individual aspirations amongst students, teachers, administrators, parents and local communities fit future school district aspirations.

The need for evaluation cannot be met with the development of complex research models because most districts do not have the time, staffing, or the understanding to implement such complex models successfully. This model includes research characteristics, but it is simplified for implementation by any district, and follows a step-by-step procedure.

Country-wide perspectives suggest that school districts are haphazard in the development of their instructional technology applications, that their planning is limited to year-by-year incremental applications, and that much of what has been done needs to be clearly analysed before continuing. This manual attempts to help districts define their objectives and develop a long-term perspective for the benefit of their students.

WHAT HAS BEEN DONE WITH THIS MANUAL SO FAR?

This manual was developed in the real world although sound theory is a part of it. The process has been formally tested in school district applications in New York State, and has been adjusted dependent on the results of careful piloting. Also, it has been circulated throughout New York State to instructional computer coordinators for their analysis and comments. It is now used by several Boards of Cooperative Educational Services (intermediate support systems) as a service to evaluate school district instructional technology applications.

IS THERE A DEMAND FOR THIS MANUAL?

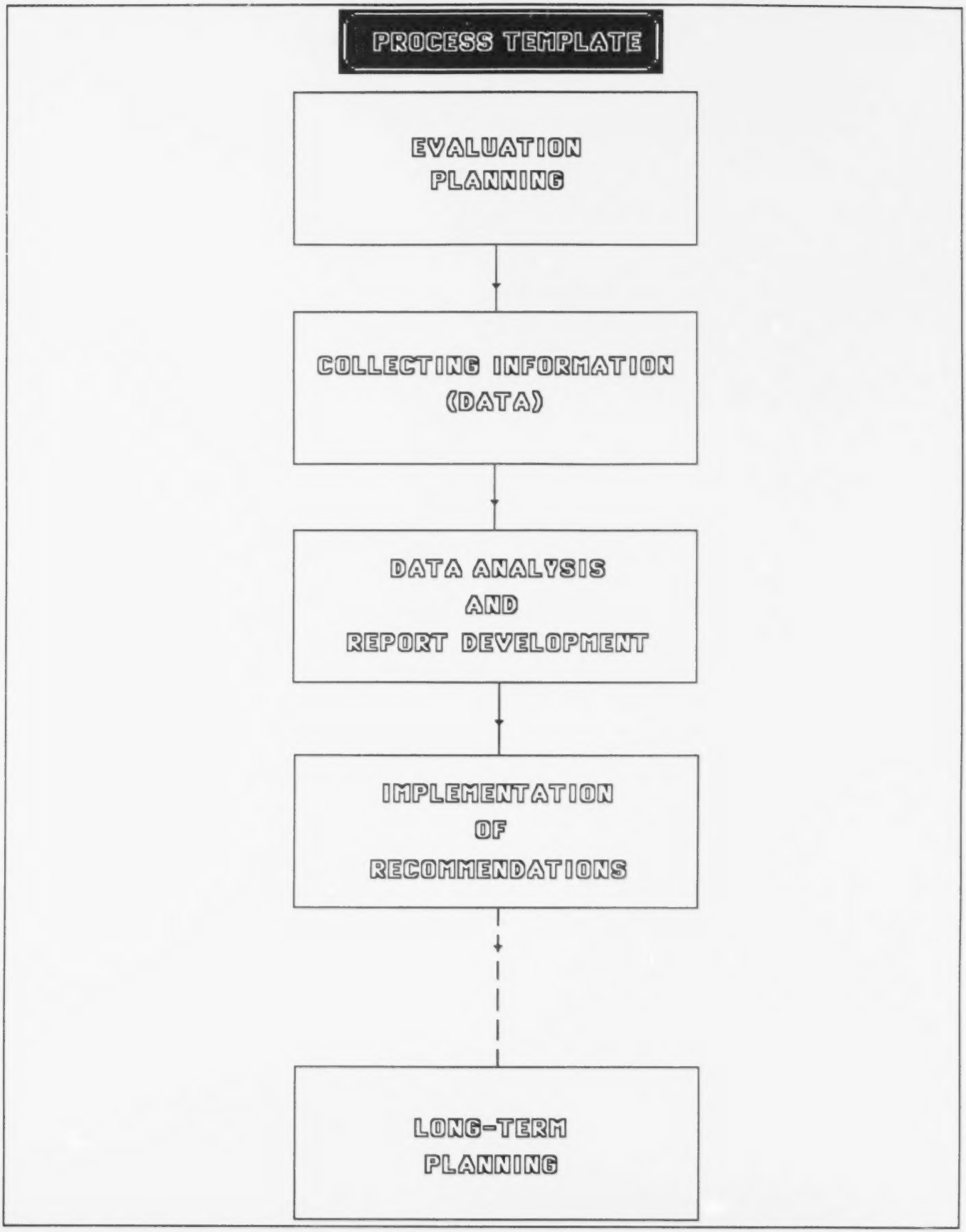
The announcement of the results of the pilot project to instructional computer coordinators, and the availability of the first drafts of this manual produced surprising responses: we were overwhelmed by requests for it, and by the comments about it. Although the manual was developed for local use, initially, the demand for it has been so great, that we have had to expand our focus to include a state-wide perspective, and to offer it through convention presentations, nationally.

WHAT IS THE FORMAT OF THE MANUAL AND WHAT DOES IT COVER?

The School District Instructional Computer-Use Evaluation Manual is designed to provide a step-by-step analytical process (see next page) for school districts to implement over a period of months. The process focuses on basic analytical questions: what? how? who? when? why?

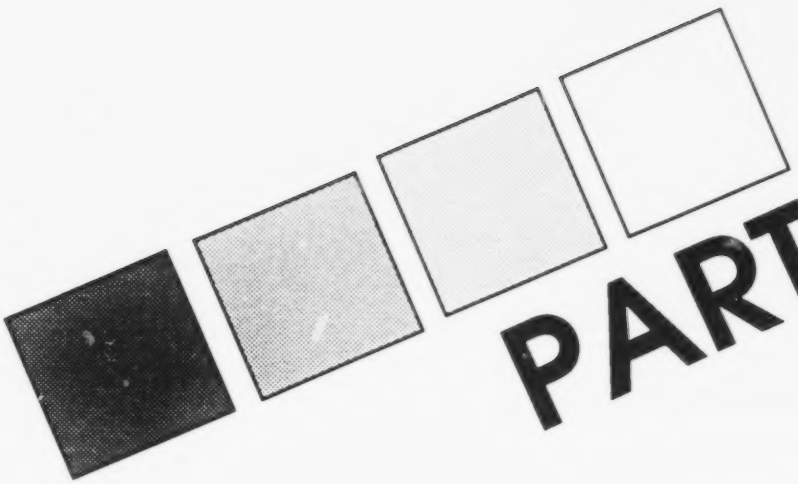
This manual provides a framework for evaluation of what districts are currently doing, it suggests who should be involved in the evaluation, what to evaluate, how to evaluate, when the evaluation should take place and how long it will take, and focuses on why particular parts of the evaluation process are necessary. Finally, it focuses on goals and objectives development, and provides information to allow districts to develop reliable long-term instructional technology-use applications. Each section of the manual is carefully outlined, and the process is reinforced with examples and suggestions in the appendices.

We hope that you, too, find this manual useful.


PROCESS TEMPLATE
EVALUATION
PLANNING
COLLECTING INFORMATION
(DATA)
DATA ANALYSIS
AND
REPORT DEVELOPMENT
IMPLEMENTATION
OF
RECOMMENDATIONS
LONG-TERM
PLANNING

CONTENTS

SECTION	TITLE	PAGE #
PREFACE		ii
PROCESS TEMPLATE		iii
PART ONE:	INTRODUCTION	1
	Taking a Structured Look	2
	From Diviner to Designer	2
	Warning	3
PART TWO:	EVALUATION	4
	Section A: Planning	5
	Section B: Evaluation	7
	Section C: Analysis & Report Development	9
	Section D: Implementation of Recommendations	9
	Time-Lines	10
PART THREE:	PROCESSING	11
	Some Givens	12
	Getting the Action Going	12
PART FOUR:	APPENDICES	16
	Appendix A: Goals and Objectives	17
	Appendix B: Survey Questions	21
	Appendix C: Targeted Interviews	23
	Appendix D: Anytown Report	26
	Appendix E: Sample Documents	40
	Appendix F: Software Alignment	42



PART ONE

Introduction

1. Taking a Structured Look
2. From Diviner to Designer
3. Warning

INTRODUCTION

TAKING A STRUCTURED LOOK

School districts all over the United States are finding that ten years of educational computer-use expansion has yielded results that are difficult to determine and that can be reported clearly to Boards of Education to encourage them to continue funding computer-use development from year-to-year. Some administrators and teachers talk about "gut feelings" but, unfortunately, these subjective measurements do not provide the kind of information that encourages the funding of expanding educational computer systems. Questions are being raised which are difficult for administrators to answer. These questions target what has been done and what equipment purchased over the last ten years in districts, how to measure the tangible results obtained through the use of computers, and what future developments might be needed and why.

This evaluation process manual attempts to help school districts go in and formally develop and apply procedures which will give the present status of computer use in the district. The process will provide the information necessary to make recommendations that will maximize the use of what has been purchased and organized in the past in instructional computer-use. It will provide reasoned incentive for change and realignment (if this is necessary), and it will provide the information necessary for the development of formal long- term plans.

FROM DIVINER TO DESIGNER

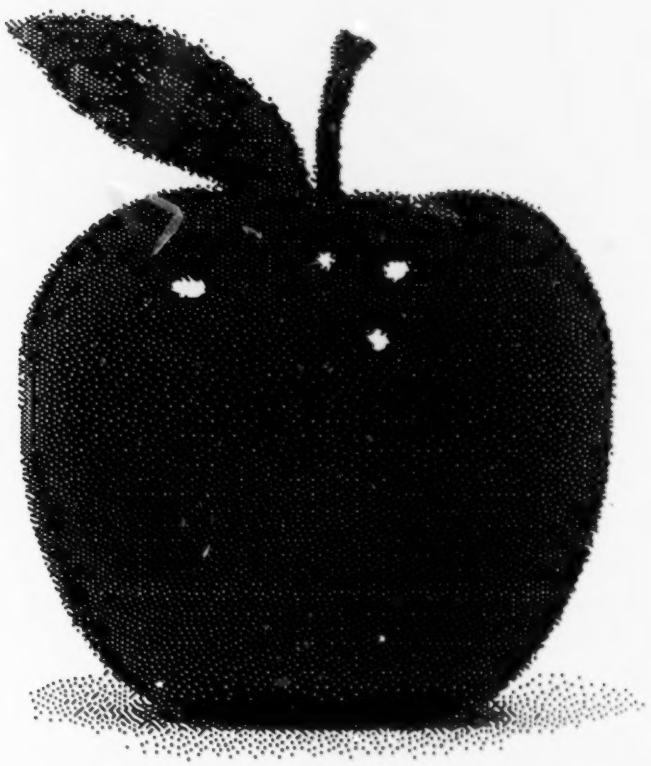
The procedures depicted in this manual have been formally researched, piloted, and adjusted. For this reason we recommend that it is followed as closely as possible with any changes included only after very careful consideration. The evaluation template, which is a synopsis of the main evaluation plan, has twenty stages. Each stage is time-blocked, and includes the method, the target, and the reason for that single part of the process. The only parts of this process that we recommend can be excluded, if they are considered untimely, are the sub-stages [2.(a) and 4.(a)] which include the involvement of public, parents, and the Board of Education.

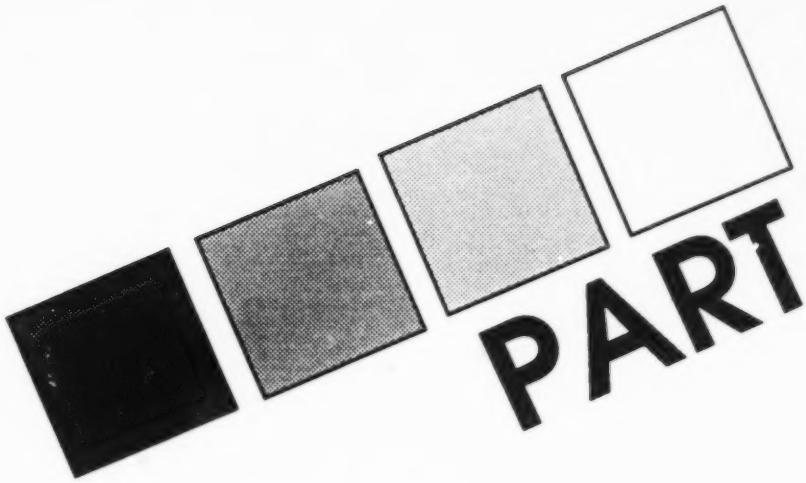
The evaluation process template is only an outline; definition and expanded explanations follow in the manual. Where relevant, each stage includes examples which can be adapted and used in the process (see appendices). The last part of the manual includes a relationary matrix for software listing, moving from the New York State Syllabi (for all subjects K-12) to district curricula, and lesson-plans: we provide the example of the alignment of the state syllabi with available MECC software because most of the New York State school districts can get multiple copies of this software. We recommend that the matrix be used by school districts to align their own software holdings (current and proposed) with syllabus/curriculum/lesson-plan content and concepts.

We emphasize that this material provides districts with a planned approach to instructional computer-use evaluation. There are developmental tasks which must be done before, during, and after the application of the evaluation process. If these developmental processes are ignored, or dealt with superficially, this will affect the veracity of the entire process.

WARNING

If your district as a whole is not committed to changing your computer applications before you become involved in this evaluation, you will find it virtually impossible to apply the results of the evaluation to a comprehensive change process. All district staff must understand that the results of the evaluation may cause disruption of existing practices. In addition it should develop expectations that may require adaptation through training.





PART TWO

Evaluation

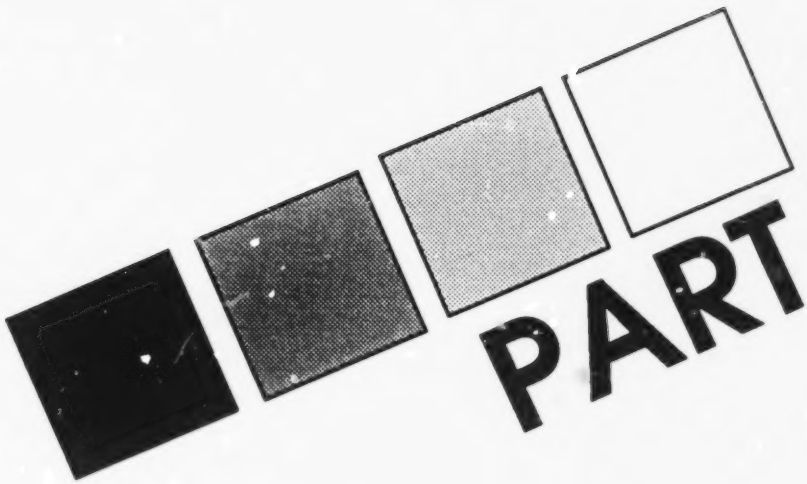
Section A: Planning

SCHOOL DISTRICT COMPUTER-USE EVALUATION PLAN

EVALUATION PROCESS TEMPLATE

SECTION A: PLANNING

STAGE NO.	TIME-BLOCKS	CONTENT		REASON
		METHOD	TARGET	
1.	2 weeks	A series of committee meetings	Establishment of district's precise evaluation objectives and an evaluation committee	To build a base on which to focus the evaluation procedures
2.	1 week	Needs analysis & commitment to paper	as above	as above
2.(a)	Board Meeting: possible involvement of the Board of Education and request for representation on computer and evaluation committees.			
3.	1 day	Round-table meeting	Information dissemination: communication and ratification	Legitimation: (i.e., providing a forum for the administrative discussion on and agreement about the procedures and tasks ahead)
4.	1 week	Superintendent's letter to all staff	Information dissemination about the established process	To provide basic information prior to building-level discussions
4.(a)	Public Meeting: possible involvement of parents and the public and a request for representation on computer and evaluation committees.			
5.	1 week	Principals' building-meetings with all their staff	To get any feedback on the process based letter	To provide initial feedback to the evaluation committee superintendent's
6.	1 week	Evaluation committee to meet	Using feedback from (5) and their own information: to develop staff survey format & content	To obtain general information about computer-use and to involve all the staff



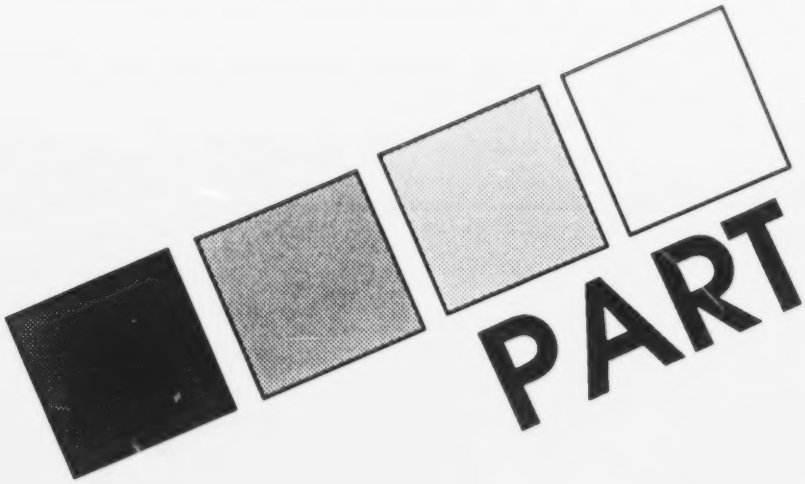
PART TWO

Evaluation

Section B: Collecting Information

SECTION B: COLLECTING INFORMATION

STAGE NO.	TIME-BLOCKS	CONTENT		REASON
		METHOD	TARGET	
7.	1 week	Evaluation survey sent out to all staff	General information for further analysis	as above
8.	1 day	Evaluation committee to meet	Staff survey analysis and use of results for the development of the next stage	To get and to use relevant information
9.	1 week	Send request to each building for staff participation in round-table brainstorming session: staff selection based on survey responses	Focus on particularly difficult questions raised in survey responses	as above
10.	1 day	Brainstorming sessions	To get a mix of spontaneous ideas and staff debate	as above
11.	1 day	Evaluation committee to meet	Correlation of all current information and the design of face-to-face question focus	as above
12.	1 week	Building visits by individual members of the evaluation committee for face-to-face interviews with staff selected to glean subject-and-geographical area information	Obtain specific information about use, scheduling, etc. by observation of both staff and students	as above



PART TWO

Evaluation

Section C: Analysis and Report Development

Section D: Implementation of Recommendations

SECTION C: ANALYSIS AND REPORT DEVELOPMENT

STAGE NO.	TIME-BLOCKS	CONTENT		REASON
		METHOD	TARGET	
13.	3 days	Evaluation committee to meet	Correlation of results of all evaluation procedures and development of interim report (confidential)	as above
14.	1 day	Evaluation committee to meet with superintendent	Discussion of interim report to focus on controversial areas	Political alignment
15.	3 days	Evaluation committee to meet	To develop the final report	Information correlation and formal presentation
16.	2 weeks	Send copies of final report to district computer committee	To give time to committee members to analyze the report	Information dissemination: communication
17.	1 day	Meeting with full district computer committee	To make the final report public and to discuss the ramifications of the report	To allow for input prior to the start of change implementation and long-term planning process

SECTION D: IMPLEMENTATION OF RECOMMENDATIONS

STAGE NO.	TIME-BLOCKS	CONTENT		REASON
		METHOD	TARGET	
18.	1 day	District computer committee to meet	Develop steps and time-lines for the implementation of change process	Action procedures
19.	6 months	Selected individuals assigned tasks	Implementation objectives and time line begun	Action procedures

STAGE NO.	TIME-BLOCKS	CONTENT		REASON
		METHOD	TARGET	
20.	6 months (to run concurrently with the implementation of change process)	District computer committee to meet on a regular basis	To develop a long-term (3 or 5 year) plan, including: a philosophy, an objectives-based process, a plan, a monitoring system, and regular evaluation procedures	To establish a planned incremental process for computer-use development

TIME-LINES

SECTION A: PLANNING

6 weeks

SECTION B: COLLECTING INFORMATION

4 weeks

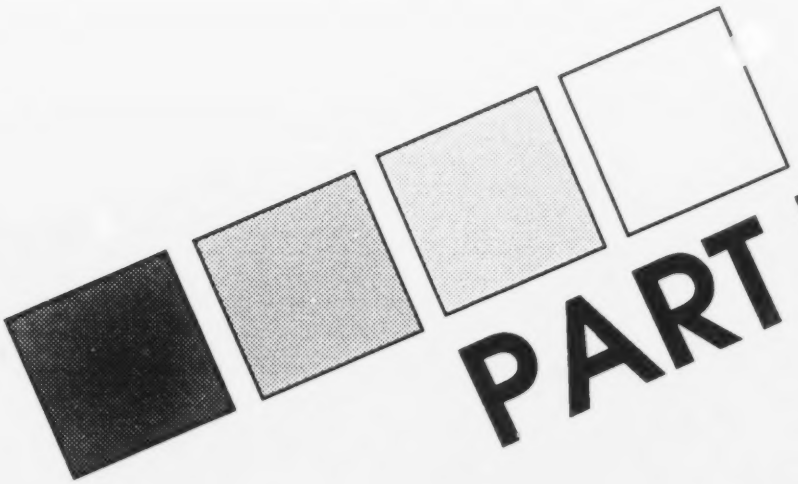
SECTION C: ANALYSIS AND REPORT DEVELOPMENT

3 weeks

SECTION D: IMPLEMENTATION OF RECOMMENDATIONS

6 months

TOTAL TIME: Between 9 and 10 months.



PART THREE

The Processing Stages: a description

THE PROCESSING STAGES

SOME GIVENS

There are a number of items which should be understood from the start of the evaluation process and that are an accepted part of this described process:

(i) The term "instructional computer-use" includes all administrative applications as well as those applications found in classrooms, laboratories, and libraries or media centers. Administrative uses of the computer, the management of students, grades, and all other applications are considered to be an integral part of this evaluation. Business offices should consider developing their computer procedures separately from other computer applications in the district, but in conjunction with the instructional procedures. If some planning alignment between business/administrative/ instructional procedures is not done it could lead to splintering, incompatibility, building isolation and pressure on teachers and other administrators when merged data or transferred data is required to make judgments about students and their futures.

(ii) All instructional applications of computer-use must be analyzed in close relationship to curricular intent. To analyze instructional computer-uses without this close association is to develop perspectives where instruction is driven by the computer and not the other way around. This is why we provide a software/syllabi/curriculum/ lesson-plan template as part of this document.

(iii) Analyses of computer-use often gloss over the following perspectives: classroom and laboratory management techniques, instructional management, the importance of scheduling, time-on-task, individualization of lessons, and the various different ways in which the computer can be used for instruction. All these must be part of the evaluation focus.

(iv) If it is discovered that procedures (such as computer laboratory usage) are detrimental to the developmental and staff-wide use of computers for instruction and that such procedures relate very closely to available resources (fiscal and material), this should be stated in the report. The change processes in these cases are difficult because they involve large amounts of money. District must be very careful not to allow educational objectives to be misrepresented in terms of available resources - this leads to misplaced goals, and a deepening of the less-than-optimum use of technology.

(v) Care should be taken to insure that at least a part of the evaluation committee has wide knowledge of what is going on in a large cross-section of other districts which are considered good examples of instructional computer-use in education. Questions must include: (a) what does our system look like in comparison to.....?; (b) what is being done to improve.....in other places?; (c) what systems/equipment/processes/items can we look at to help us in our district?

To evaluate instructional computer-use in a vacuum is not the way to do it; comparisons must be made, help should be sought, and associations must be developed to insure that the best options available, given local limitations, are possible.

GETTING THE ACTION GOING

<u>Stages 1 and 2: assessing district needs related to the proposed evaluation process</u>
During these first three weeks a committee of selected district staff (called the computer committee) will meet under the chairmanship of a senior district administrator, who has the ability and right to make decisions, to establish; (i) why an evaluation is needed, and; (ii) what, exactly, the evaluation must target (set up a series of objectives - see Appendix A). At the end of the three-week

period the committee must have committed these objectives to paper, have submitted them to the School Superintendent for approval, and include recommendations for the evaluation committee. It is suggested that at least two members of the evaluation committee should be educators/consultants from outside the district, and that their positions on the evaluation committee should be senior positions.

Sub-stage 2.(a) involves the district's Board of Education in the evaluation process on a formal basis. This is a suggestion only. The School Superintendent must assess the situation and consider whether it is politic, at this time, to involve board members in the process or simply to keep them informed.

Stages 3 - 5: dissemination of information and communicating evaluation intent to district staff

These stages are part of the district's legitimation procedure. Change processes, which are the ultimate target of this evaluation, are always threatening to staff. The legitimation procedure is designed to do three things: (i) to inform; (ii) by informing to cut down on the threat posited by the evaluation process; (iii) to obtain basic information through feedback to the information dissemination.

The three stages involve refining the information through the interaction of the computer committee with senior administration (stage 3), indicating how important the process is through the direct involvement of the superintendent in the information dissemination process (stage 4), and allowing for feedback at this level of information dissemination by involving the building principals in the process and requesting responses in staff meetings (stage 5). Sub-stage 4.(a), the involvement of parents and the public, is a suggestion only. Should the superintendent deem it inappropriate at this time, this sub-stage should be omitted (however, informing the public and the parents should remain a priority).

Stages 6: development of a staff survey instrument

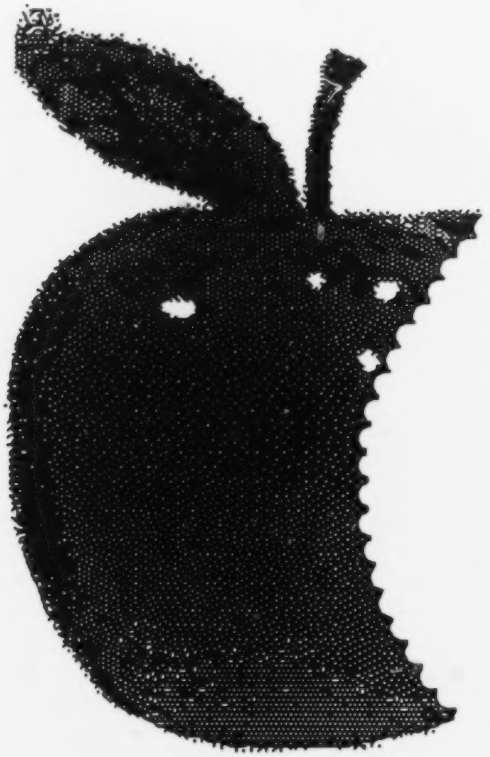
Part of the legitimation process and the attempt to cut back on the threat of change must include all the district staff in the evaluation process. The easiest way to do this is to develop a brief survey instrument (questionnaire) which every member of the staff can be invited to fill out. Stage 6 targets the development of this instrument (see Appendix B) by the evaluation committee using data from the initial information feedback, from the objectives set up in the first stages, and from other sources discussed by the committee (such as instruments developed by other groups, research material, and the intuition of the committee members, themselves).

The instrument should be closely aligned with the original evaluation objectives (answering the general question "what am I trying to find out, and why?") and should be piloted using a small group of randomly selected teachers to make sure the questions are clear and that they do target the objectives.

Stage 7-8: the dissemination of the survey and the analysis of results

It is recommended that it be distributed by principals at a staff meeting, and that the principals take the responsibility for collecting them. Clear deadlines must be stated. These questionnaires are not confidential; in fact, staff should be asked to fill out their names, grade levels and subject areas (where applicable) on them. The reason for this procedure is that it gives the evaluators the opportunity to return to respondants for clarification, and for further information.

Stage 8 involves the evaluation committee in the analysis of the results from the survey (see Appendix B) and the targeting of specific staff-members who represent a cross-section of responses for brain-storming sessions and face-to-face individual interviews and observation during the next stages.



Stages 9 - 12: brainstorming, interviews and observations

In stages 9 and 10 the evaluation committee sends requests to building principals to meet for a brainstorming session with a cross-section of staff selected from the staff survey responses, and then meets with them. What is needed here is a group with diverse subject and grade interests, diverse attitudes to computer-use, and diverse experience in using computers. Following these requests, selected members of the committee (not the whole committee) meet to brainstorm (using the typical form of brainstorming: no threat, no criticism, input and discussion without monitoring allowing ideas to be bounced around which focus, again, on the objectives set up by the committee) with the selected staff members. At this time, too, committee members should also inform all staff, through their principals, that they have special times set aside for brief meetings if there are individuals who would like to give input alone. This is, again, to allow for non-threatening situations for input.

In stage 11 the evaluation committee again meets to correlate the information recieved from the brainstorming sessions and to discuss it. At this meeting, too, members of the committee refine the information they are looking for in the 12th stage when they go into the buildings for a period of observation and on-site, subject/grade targeted interviews (see Appendix C).

Stage 12 is the on-site observations and interviews. These take place every day over a period of a week, allowing as much observation of teachers and students as possible within the usual time restrictions applied by schools in session. **NOTE:** if the members of the committee plan to interview individual students they should notify the principals of this fact so that parent releases can be obtained prior to the meetings.

Stages 13 - 15: generation of the district instructional computer-use evaluation report

Stage 13 is a meeting of the evaluation committee to correlate all material, obtained at this point, work out general headings for the report, and to develop an abbreviated interim report which highlights controversial parts of the findings. This interim report is confidential, and is for the school superintendent only (see Appendix D). The report is sent to the superintendent prior to

meeting for discussion. Stage 14 is a meeting between the evaluation committee and the school superintendent to discuss the findings in the interim report, and to organize the findings for the final report.

Stage 15 is a three-day concentrated planning meeting of the evaluation committee to put together the final report, a draft of which is then sent to the superintendent for approval. Final adjustments are then made, and the report is ready to be made public. A brief summary of the report (1 or 2 pages) should be developed in the name of the district computer committee for their circulation to all district staff after the computer committee's perusal of the final report.

Stages 16 and 17: final report to the district computer committee

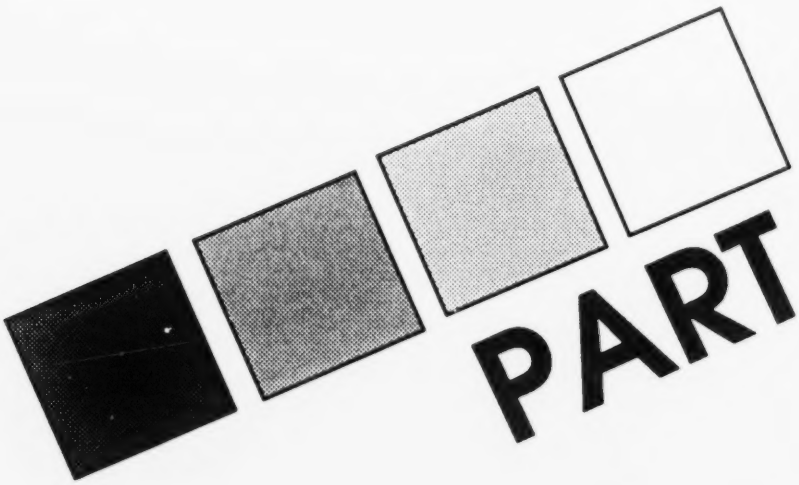
In stage 16 copies of the final report are sent to the district computer committee, followed in stage 17 by a meeting between the evaluation committee, the district computer committee and the superintendent, to discuss the findings. The report should then be brought to the Board of Education with a statement of the processes to be developed in stages 18, 19 and 20 (see Appendix D).

Stages 18 and 19: immediate changes based on the instructional computer-use evaluation report

Stage 18 is a day-long meeting of the computer committee to develop a plan for the implementation of the immediate instructional computer-use changes that are needed in the district and that can be made using resources already available or that require process/scheduling/activity changes that can be made without extensive district/school disruption. Stage 19 is the implementation of these changes.

Stage 20: the long-term plan development

Stage 20 is the beginning of the development of an instructional computer-use long-term plan (3 or 5 years) based on the evaluation report. A standard planning procedure should be used here, which includes the development of a district-wide instructional computer-use philosophy, an objectives-based plan, a delineation of process and time-lines, the alignment of responsibilities with particular individuals in the district system, a carefully described monitoring process which starts as soon as the first pilots are implemented, and the regular evaluation and supervisory procedures which will be applied to the programs and the staff.



PART FOUR

APPENDICES

APPENDIX A.

Selected Goals and Objectives

GOAL #1: TO EVALUATE THE SCHOOL DISTRICT COMPUTER APPLICATIONS AS A WHOLE, AND DEVELOP A CLEAR PICTURE OF THE RELATIONSHIPS OF THE PARTS WHICH INCLUDE: (i) Grade-level applications; (ii) Curricular relationships; (iii) Building relationships; (iv) Subject relationships (v) Computer skills development needs.

OBJECTIVE #A

To develop district-wide awareness of the evaluation and to involve as many personnel, parents, and board members in the process as possible.

sub-objectives

- #1 To write memos to all staff, individually, to explain the process.
- #2 To arrange meetings in each school building at which the principals will discuss the evaluation and its ramifications.
- #3 To develop a time-plan with precise dates, times and envisaged amounts of time during which staff members will be involved.
- #4 To handle concerns of any individuals/groups who need to discuss them (open door policy with stated times for meeting.)
- #5 To develop two lists:
  (i) A "wish" list from staff.
  (ii) A list of possible problems.

OBJECTIVE #B

To work with a selected, representative group to plan the evaluation process and to establish the selected objectives for your particular district.

sub-objectives

- #1 To improve instruction.
- #2 To improve student evaluation.
- #3 To improve student involvement.
- #4 To improve student attitudes.
- #5 To expand instructional options.

GOAL #2: TO ANALYZE THE RELATIONSHIP BETWEEN INTEGRATED ADMINISTRATIVE COMPUTER APPLICATIONS AND DIAGNOSTIC CLASSROOM INSTRUCTION.

OBJECTIVE #B

To work with a selected, representative group to plan the evaluation process and to establish the selected objectives for your particular district.

sub-objectives

- #6 To formalize computer/curriculum integration.
- #7 To focus on equity of computer-use and instruction.
- #8 To focus on teacher skills.
- #9 To focus on year-by-year computer skill development: a progressive skills program.

OBJECTIVE #C

To establish clear lines of communication to students, teachers, administrators, parents, and board members.

sub-objectives

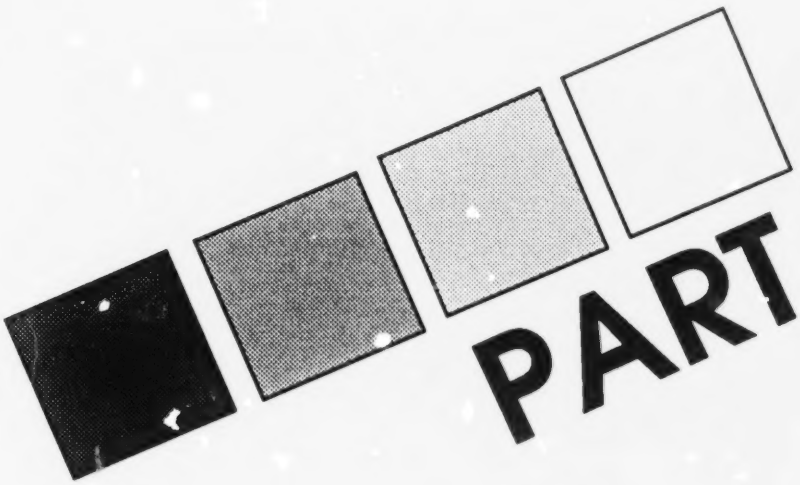
- #1 To develop written procedures detailed at every point of the evaluation plan.
- #2 To define the required involvement-level of each group: students, teachers, parents, administrators, and board members. Keep them informed.
- #3 To maintain a separate telephone-log of communications which focus on this project.
- #4 To define which individuals will have written evaluation participation (survey) and which will have face-to-face interviews.
- #5 To detail on-site observation visits.

GOAL #3: TO APPLY THE EVALUATION RESULTS TO A CHANGE PROCESS IN THE SCHOOLS WHICH WILL RESULT IN: (i) Improved subject-specific instruction; (ii) A logical, on-going, planned progression of expanding computer skills for students and teachers; (iii) The maximization of computer resources, human and material, at any time; (iv) The planned expansion of computer resources including teacher training, hardware, and software.

OBJECTIVE #D

TO USE THE EVALUATION RESULTS TO DEVELOP A THREE-TO-FIVE YEAR PLAN FOR THE IMPROVED USE AND APPLICATION OF COMPUTERS AND RELATED EDUCATIONAL TECHNOLOGY IN THE SCHOOLS.

sub-objectives



PART FOUR

APPENDICES

APPENDIX B.

A Selection of Survey Instrument Questions

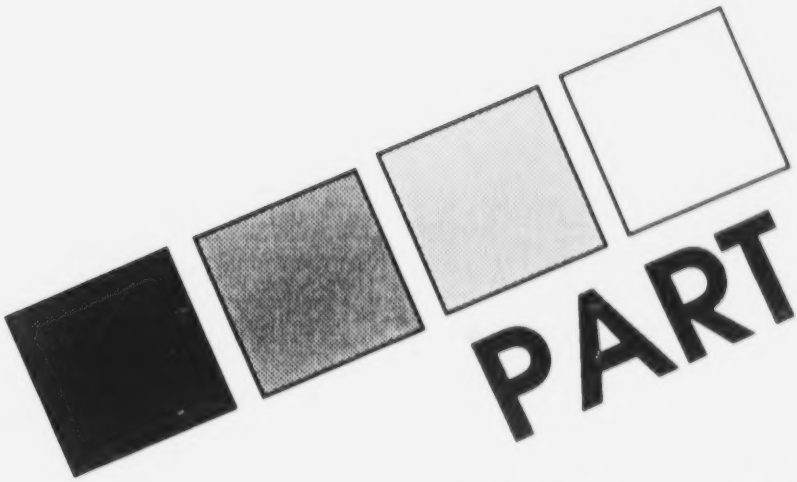
APPENDIX B A SELECTION OF SURVEY INSTRUMENT QUESTIONS

A comment about types of questions:

It is important to allow respondents to give their opinions in an evaluation questionnaire. For this reason we offer a mix of closed-ended and open-ended questions. The open-ended questions are the most difficult to correlate when developing statistical results, but they do give directions and expand on the closed-ended responses.

These questions are a sample only and do not pretend to be an exhaustive list. Your survey questions must target the objectives that you have set up for the evaluation process.

1. Do you have any formal computer training? Please give details.
2. Do you use a computer (or computers) in your teaching? Please give brief details.
3. Do you have access to computers in your own classroom for instructional use?
4. If you have access to computers in your own classroom for instructional use do you have this access whenever you need it, or do you have some use of a "floating" computer?
5. Do you have access to computers in a laboratory setting for instructional use?
6. If you have access to computers in a laboratory setting do you have access on a regular basis when you need it, or is the scheduling selective, and you have to "fit in" when you can get time? Please expand your explanation of your use of the laboratory and your access to it.
7. Is there a sufficient number of computers available to your students in the laboratory at any time? Please explain.
8. Do you feel that you are kept up-to-date about instructional computer use?
9. How are you informed about developments in instructional computer use?
10. Would you prefer access to a single computer in your classroom, or a laboratory of computers, or both?
11. Do you have easy access to available software? Please explain.
12. How is your school software organized?
13. What training would you like to help you in your use of computers in your instruction?
14. Do you know what these terms mean:
    Programming
    Computer Managed Instruction (CMI)
    Computer Assisted Instruction (CAI)
    Tool-use Software
    Computer Graphics
15. Do you feel that the computer support given in your building is good? Please explain.
16. Is the hardware (the computers themselves, the printers, and any other devices attached to the computers) supplied for your use in the building sufficient for your needs? Please explain.
17. Do you believe that computers are becoming an important part of teaching, or do you think the use of computers is just another fad?
18. What is your subject area?
19. What grade(s) do you teach?
20. Do you consider instructional computer-use an integral part of your instructional curriculum, or is it simply an add-on?
21. Do you use teacher utility software (i.e., grade reports, lesson plan generators, scheduling programs)?
22. If you do use teacher utility software is it your own, or does the district (building) supply it as a standardized part of their computer operations?
23. Do you have a computer at home?
24. If you have a computer at home, please explain what you use it for.
25. Look at the following levels of computer-use. Where do you fit in?
    a. Programmer.
    b. Keen to expand my understanding of computer-use and spend a lot of leisure time working on expanding my knowledge.
    c. Comfort with all regular uses of the computer.
    d. Basic knowldge of computers; do not feel really comfortable using them.
    e. Have no knowledge of computers, but would like to learn.
    f. Have no knowledge of computers and have no intention of using them.



PART FOUR

APPENDICES

APPENDIX C.

Targeted Interviews

APPENDIX C TARGETED INTERVIEWS

TRAINING:

1. When is the best time for training?
   - Summer
   - Release Time
   - Before School
   - After School
   - Weekends

2. Where should the training be done?
   - At your school
   - At a training center
   - In your classroom
   - In a laboratory

3. What kind of training is necessary?
   - Teacher utilities
   - Administrative diagnostics
   - Subject-specific software
   - Tool software
   - Instructional methodology with computers
   - Technological components of computers
   - Programming (Basic, Logo, etc)
   - Computer peripheral use
   - Building interfaces

INSTRUCTION:

1. Would you prefer to teach in a laboratory or in your classroom, or a combination of both?
2. Do your students have access to computers to apply the skills that they have learned (e.g., if they are used to using word-processing, does the school give them access to computers on their own so that they can write reports, etc?)
3. Who makes the decisions about the use of computers in instruction?
4. Who makes the decisions about the computer skills that students learn?
5. Do teachers have private access to computers for their own work in your building?
6. Do you use computers to teach as a normal, every-day instructional approach, or do you do it sporadically, when computers and software are available to you?
7. Does your curriculum have the use of software written formally into it?
8. Do you use telecommunications as part of your instructional applications?
9. When using computers or other forms of educational technology in your instruction please explain which of these options you feel best describes your function as a teacher:
   (i) You are an information provider whose position in the class is central.
   (ii) You are an information guide whose position is peripheral in the class.
   (iii) You are the teacher, and the use of technology is always secondary.
10. Within your discipline, do you teach students how to find, regulate, manipulate, and report information?

SCHEDULING:

1. Is there a difference in computer-use in your school depending on the geographic location of classrooms in the building? (e.g., from floor-to-floor, or distance from the laboratory.)
2. Who organizes the computer scheduling in your building, and does this have an effect on the availability of computers and software to particular groups of teachers or individuals?
3. Is there a regular check on computers that have been scheduled for use, and are they usually being used?
4. Is the present method of computer scheduling effective?

5. What changes to the scheduling of computers would help provide more effective instruction?
6. Are regular classes interrupted by computer scheduling?
7. Are classes fragmented by computer scheduling?
8. Is there an alignment between what is taught in the computer laboratory and what is being taught in the classroom?
9. Could the organization of regular school scheduling be changed to maximize both computer use and instructional applications?

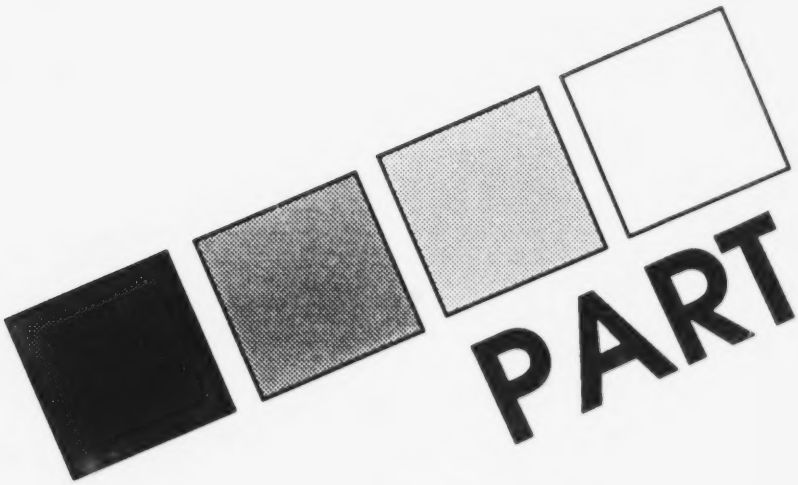
SOFTWARE AND HARDWARE PLANNING:

1. Do you want to review your own software or would you like others to do it for you and recommend its use?
2. Do you know what software is available in the district/school?
3. Do you have a list of software that is regularly updated?
4. Is there software which you know is available but which your school does not have?
5. In your opinion, what is the educational standard of software available to you at this time?
6. Is your use of software in instruction an end in itself, or is it integrated into what you are teaching?
7. Who handles and controls the software that you use?
8. Is your library (media center) an integral part of computer-use and software dissemination in your school?
9. Are you given an opportunity to recommend software when it is being purchased?
10. Are you given demonstrations of new software in your district?
11. Do you have access to the following software and peripherals in your building:
    Laser disks and laser-disk players
    Large-screen monitors
    Liquid crystal display units (i.e., units which fit on an overhead projector to display computer screen images.)
    CD-ROM systems (such as the Grolier's Encyclopedia)
    A computer with a modem allowing telecommunications
12. Do you have access to any of the on-line educational data-bases (e.g., Einstein, CompuServe)

OTHER QUESTIONS:

1. Would the use of a laboratory technician or parent volunteer in the laboratory be of use?
2. How much parent involvement in computer developments and use is there in your district/school?
3. If you were given the opportunity to ask for any kind of computer support/equipment, what would you ask for?
4. Do you feel that the administration in your building/district supports you sufficiently in computer-use development to make the regular use of computers in instruction a viable proposition?

ADDITIONAL DISTRICT QUESTIONS:



PART FOUR

APPENDICES

APPENDIX D.

Anytown School District Report

APPENDIX D.

ANYTOWN, USA, IS AN IMAGINARY K-9 DISTRICT

ANYTOWN SCHOOL DISTRICT
INSTRUCTIONAL COMPUTER-USE REPORT - JUNE 1987

1. Introduction

The computer-use analysts who developed this report would like to thank the teaching staff, administration and secretarial staff of Anytown School District for their help and cooperation.

In the 1986 report "Transforming American Education: Reducing The Risk To The Nation," from the National Task Force on Educational Technology, the following areas were pinpointed as areas of greatest concern in school district computer-use development. Each of these areas will need closer analysis in future long-term planning in Anytown Schools.

(i) Lack of planning
(ii) Inequitable distribution
(iii) Inadequate software
(iv) Increased cost
(v) Obsolescence

The report identifies 5 priority applications of technology in education:

(i) To develop basic knowledge and skills more efficiently than is possible with conventional instruction.
(ii) To teach higher order concepts and reasoning skills.
(iii) To develop an understanding of information technology and its uses.
(iv) To enable teachers to manage a learning environment in which learning is tailored to fit each student's needs.
(v) To develop proficiency in applying computers and related technologies.

The listed items will be focused on in the development of recommendations for planning and developmental instructional computer-use applications in this report.

This report is divided into four parts: (A) The analysis of the district-wide system and some recommendations for change. (B) The analysis of the elementary school and recommendations for change (C) The analysis of the junior high school and education. All recommended changes are for the 1987/88 year. An addendum about software and district coordination is included at the end of the report.

Finally, there are recommendations for the expansion of the analysis and the development of a long-term three-year plan starting 1988/89 in a plan to be developed during the 1987/88 school year.

2. The Analysis and Recommendations

A. The District:

Instructional computer-use planning approaches in the Anytown School District are listed in a document issued in 1984 "Anytown School District: Anytown's Proposed K-9 Computer Education Program". This document lists a series of broad-based goals targeting the concepts of "computer literacy" and "computer science". It appears that most of these goals have been dealt with in the development of actual computer use within the schools, particularly at the elementary level. However, because of their broad-based nature, and the lack of definition of specific applications of such things as "curriculum integration," "computer science," and "computer literacy," district developments have become inequitable, uncoordinated, and speculative.

The district-wide planning and coordination process has been subordinated to building planning and coordination. As a result of this focus there has been little success in integrating student computer skills development, learning processes or applications across the district. This has led to extensive student computer-use applications on a formal basis at the elementary level with almost no reinforcement or expansion and some redundancy at the junior high school level.

The original focus of the Anytown School District on the broad concepts of "computer literacy" and "computer science" in 1984 was considered relevant at that time. Today, these broad concepts are considered outmoded and an emphasis on them is thought to cause misleading and splintered applications. The district, therefore, requires the development of a new, flexible instructional computer-use philosophy and development plan based on sound current educational and technological concepts. These concepts include the targeting of:

1. Curriculum-based instructional applications and not on hardware availability and "general skills" assimilation such as "problem solving" (Winkler 1984). Please note that the concepts of critical thinking teaching subscribed to here relate to the school of thought that maintains that curricular integration of instructional approaches to critical thinking is superior to the application of "pullout" programs.(See Barry K. Beyer, for example)

2. The computer's ability to individualize learning (Bork 1986).

3. Specifics with evaluation procedures attached which will allow for change and upgrading of programs during their use (Bork 1986).

4. Staff training and the expansion of computer use concomitant with the development of teacher skills (Valdez 1986).

5. Administrative support of computer-use expansion through stated commitment and on-going training for administrators (Mojkowski 1986).

6. Technological assimilation into the district's policy as an integral part of its educational philosophy (Sturdivant 1986).

7. The coordination of the district-wide policy in instructional computer-use applications.

Finally, it is very important that the district policy include a copyright statement. There is evidence that programs are being copied in the district and that it is being done on a regular basis (however, this is not encouraged by the coordinators, nor are they involved.) Recent software company action against copyright infringements makes this an urgent requirement.

B. The Elementary School:

In general terms, the elementary school has a functioning instructional computer-use development program. This program has a number of very positive characteristics which should be maintained:

(i) It shows clear commitment to computer-use applications.
(ii) It is developmental.
(iii) It includes curriculum-based training.
(iv) It encourages classroom teachers to get involved.
(v) It has a coordination and information dissemination component.
(vi) It is equitable.
(vii) It is developed within an educational/conceptual framework.

The processes which are most important which this program has introduced into the school's schedule are the formal involvement of both students and teachers in regular computer use, and the on-going use of the computer in instructional applications.

However, it is recommended, based on the district-wide perspective, the current concepts of instructional computer-use, and the availability of resources in the school, that the following changes be made for the 1987/88 school year:

(i) Scheduling:

The present scheduling of classes for one week in the computer lab, and the following week for a single computer in the classromm is meritorious because it allows students and teachers regular access to computer applications. However, problems have resulted from the informal procedures used for class scheduling and reliance on the coordinator's regular contact with individual teachers when an instructional "fit" is being developed. Four major problems accrue because of the way in which scheduling is organized:

(a) The curricular section of the computer applications (designed to be one period/day for two days) often deals with content and skills that are not currently being dealt with in the regular classroom.

(b) Computer-use schedules are often disrupted by other applications in the building. This means that regular teacher planning which might incorporate computer applications is virtually impossible over the long-term.

(c) The computer "skills" being taught as part of this schedule (Word processing or Logo applications) usually are unrelated to any curricular applications.

(d) The application of curriculum-based computer-use without extensive prior planning possible, means that the individualization of student use is ignored, and is based on the ability of the software to adjust to levels of student ability.

It is recommended, that the computer lab schedule be changed and formalized so that teachers have due notice about it, and computer applications are fitted to what is being taught to reinforce or expand it. Teachers must plan ahead so that curricular objectives are met and individual student needs are targeted in the lab.

(ii) Content:

It is admirable that the elementary school has focused on both computer skills and curriculum. This is evident in the three parts to the program: the curricular focus, word processing and Logo, and the use of utility programs such as "Print Shop". However, it is believed that the focus of these applications should be consolidated and that their application should be more precise. It is also considered important to focus on other skills at this time.

It is recommended, therefore, (a) that Logo be suspended from the elementary school program entirely (b) that the use of "Print Shop" be limited to K-2 on a formal basis and that these three early years should be designated as "computer awareness years" (c) that the skills focus 3-6 be incorporated into the on-going, integrated development of tool-use software, specifically: 2-6 Word Processing; 4-6 simple Data Base usage; 3-6 Keyboarding.

(a) The use of Logo as a problem-solving, computer applications skills developer is questionable with outcomes that cannot be measured at this time, and requiring the teaching of transference skills which are not being taught. The usefulness of this programming application at this level in this school and nationally, therefore, is in doubt. Also, it is thought that elementary students' time can be put to more productive use related directly to regular curriculum applications.

(b) Although "Print Shop" is a "fun" program which can be taught easily to students and a program which they enjoy because it appears productive, this is also an educationally questionable program. It is suggested that its applications can be better done in art class. The computer skills learned through its use are very low level, and this is why we recommend its formal use in K-2 classes, only. Furthermore, at this time three computers in the computer lab are regularly dedicated to "Print Shop" applications - these three computers could be freed up for better use.

(c) The development of skills - both computer skills and usable curricular skills - can be done with the regular development of tool-use software related to classroom applications. This recommendation, it should be realized, is related to the use of the computer as a productive curricular tool. For this reason, the computer curriculum itself, related to the use of these programs, must be designed to expand the students skills from year-to-year.

It is suggested, therefore, for example, that students might begin with "Bank Street Writer", move to "PFS Write", and have an introduction to "Appleworks" as a word processor before going on to the Junior High School. This developmental program correlates with the development of student writing skills, and should be stressed through expanded applications in writing that occurs in the regular classroom.

Data base applications should begin in fourth grade, be related, for example, to the science, social studies, and math curricula, and provide an introduction for students to the learning of the "information" skills, related to technology, so necessary to them in later years.

Keyboarding and word processing are closely linked. The observation of classes shows that students in the junior high school and the upper classes of the elementary school suffer from the use of the "hunt-and-peck" technique. It is recommended that formal, on-going and regular keyboarding be taught at 3rd and 4th grade levels and that review keyboarding programs be used to reinforce and remediate at the beginning of 5th and 6th grades. Students should be competent at keyboarding by 6th grade and should require no further formal involvement unless they choose to enter a business program at secondary school level.

(iii) Hardware and Software Configurations:

The mangement of hardware and software at this time falls on the shoulders of the computer coordinator. Also, the configuration of the hardware is based on present usage, and should be changed if our previous recommendations are acceptable and are implemented. Changes to the management system will, we believe, not only be more efficient, but will free up time for the coordinator - something that is much needed.

It is recommended, therefore, that the hardware and software configurations be changed as follows:

(a) Hardware:
That the 3 Apple computers used for "Print Shop" applications be moved to the library and that they be placed with the current Apple II+ in the same room - one printer should accompany them. That this room be dedicated for student computer use and that all other functions and equipment be removed from it.

It is realized that there will probably be some opposition to this recommendation and that the present lack of use of the machine already in the library will be cited as the reason. However, we believe that the use of computers in the library would allow students to reinforce their learning, would encourage experimentation, and would allow time and a place to develop, for example, reports and creative writing assignments. Two concomitant actions must be applied, here: The use of these machines must be advertised and encouraged by teachers, and the librarian must be trained and encouraged to offer computer time to classes involved in the learning of library skills. The use of these machines should also be offered to staff on a regulated basis for their individual use.

The rest of the machines now in the lab should remain there. The organization of the use of these machines should encourage individualized learning. Also, free lab time should be available for teachers to schedule classes they would like to teach in the lab.

The "floaters" should be continued to be used as they are now used but with more careful supervision. It is recommended that teachers should be allowed the option to use "floater" by signup. Although we cannot corroborate our sense of "floater" use from evidence in Anytown Elementary School apart from some observed staff antipathy to computer applications, evidence from other school districts suggests that "floaters" are often relegated to "games" centers, especially where teachers are not convinced of their educational usefulness. If teachers are not convinced of the computers' usefulness it is important to know this and to adjust accordingly; the school's source of computers is limited, and it would be far better to reallocate the "floaters" to classrooms where they would be used than to have them used for games, or not used at all.

(b) Software:
It is suggested that all software available to teachers and students in the elementary school be indexed and controlled through the library. This is in line with the developing concept of libraries as "media centers", and at this time the library is already circulating books and audio-visual items.

It is also recommended that a complete set of readily accessible MECC software be kept permanently in the computer room in the library, together with tool software and any other software needed for regular use.

(iv) Other Changes:

(a) Parent involvement:
It is suggested that parent involvement in computer applications is both necessary and useful. For these reasons we recommend that parents be invited to get involved in a computer education program at the elementary school level. This program should include two things: information about current computer programs for children in the school and the processes targeted, and an instructional tool-use program for home and small business use.

Also, it is recommended that voluntary parent involvement as lab and classroom aides, should be actively sought to reinforce the work done by the coordinator, and also to make productive use of parent skills. This part of the process should involve those parents who already have some computer skills.

(b) Teacher training:
It is suggested that teacher training this summer and during the year should include teacher utilities, CAI software, and the integration of tool software into the curriculum. These training applications would reinforce changes in the computer use programs in the school and would encourage teachers to get more deeply involved in classroom applications and in the use of the library computer room.

(c) The Principal and his office:
The principal encourages computer applications in his building, but does not indicate support through his own use or knowledge of computers. Recommendations should be found in the RCC's administrative computer-use report.

(C) The Junior High School

The Junior High School program focuses on programming electives and keyboarding. At this time, apart from special education applications, there seem to be very few teachers involving their classes in computer use on a regular, formal basis (an exception to this is in the technology classes where the teacher has a computer in the classroom). A very small number of other teachers use computers in their classrooms for utility applications, and it is in these classrooms that this school's "floaters" have become semi-permanent fixtures.

Computer application and planning problems in the junior high school focus on a lack of time for the coordinator who is required to teach math as well as the regular computer programming electives yet still find time to organize and help other teachers - this situation is just not working. There is a communications problem within the building and this is evidenced by a lack of staff knowledge about computers and what is available for their use, up to five periods per day when the lab is not used, and a lack of support from staff for computer-use. Most importantly, there is little correlation between the present computer applications in the junior high school and the high school where most of the students will eventually go. This has recently resulted in a poor performance by students from Anytown in the programming courses in the high school. A future problem related to the feeder district's middle school philosophy and tool-use can be alleviated if change recommendations are accepted.

It is recommended, therefore, that a complete re-thinking of the computer-use development is necessary in this school. However, this should begin with the following changes for 1987/88:

(a) The present Apple computer lab should be split as follows:
    (i) 15 machines stay in their present location.
    (ii) 5 machines are added to the single machine in the library - total 6.

The large lab should be closed off and used as a classroom so as to cut down on outside interference and on noise in the library from the lab.

The library computers should be placed in a semi-private location to allow students privacy to do their own work, but to allow the librarian and her aide to supervise them. This small lab would be the librarian's responsibility. It is also recommended that for the 1986/87 year, the library aide be made available for the support of the coordinator and other staff who are using the large lab and that the function of the aide be to boot up programs prior to class use and to provide basic supervisory support in the lab.

The remaining two Apple computers from the lab should be placed in the teachers' room for their own use. Carrels should be built in this room to offer staff some privacy when using the computers.

The "Floaters", now used by two particular teachers, should become supervised and controlled "Floaters" that teachers know are available, and are encouraged to use.

The TRS 80 (III) computers with disk drives should be used as incentives for teachers who want to use computers regularly, to be given them for 3-month periods to do what they want with them. Some software recommendations should be made for their use when they are given out. The other TRS 80 machines should be sold or discarded.

(b) All software should be indexed and added to the library for circulation. This would allow individual users access at all times, and would free up the coordinator from this chore.

(c) Summer training for selected science, math and social studies teachers should include:
    (i) Tool-use software
    (ii) Teacher utilities
    This should be considered the beginning of regular training to encourage the use of computers in regular curricular applications in the classroom and CAI applications in the lab.

(d) The computer lab should be used for three applications:
    (i) The scheduled teaching of "Appleworks" to all students on a regular basis, designed so that 7th grade is an introductory course to word processing, and 9th grade ends with an understanding of the integrative function of the program. This application should be tied, initially, to the language arts programs, but should be expanded 7-9 to include a focus on report writing in science and social studies.
    (ii) The scheduled teaching use of CAI, by request, and advertised as available.
    (iii) The development of data base usage related to particular subject applications, specifically in science, math, and social studies.

A 7-9 schematic is included at the end of this report and attached to the summary of recommendations.

(e) It should be noted that keyboarding and programming are removed from the junior high school schedule. This is because keyboarding should be offered in the elementary school as recommended earlier in this report. Both introductory and advanced "basic" are offered at the High School level on the IBM. There is evidence that the "basic" programming now offered as an elective at the junior high level on the Apple computer is causing confusion for students at the high school, and has a detrimental effect on their advancement in computer use. It is interesting to note that the feeder district is phasing out middle school programming.

Expanded reasons for the changes recommended for the junior high school and outlined above are:

(i) The school's current program needs to be consolidated and aligned with that of the elementary and high school.

(ii) The school requires a year of careful analysis before substantive changes can be made, and this analysis might include curricular changes which would have a direct effect on computer applications. The involvement of the new principal in the process is very important.

(iii) The maximization of what exists depends on changing staff attitudes about, and their use of, computers. These recommended basic changes will allow for the beginnings of such a process without too much threat.

(iv) The staffing of computer coordination and teaching is inadequate. A minimum of an extra aide is required at this time. However, the changes suggested do make use of the library staff who may have the time to devote to the process.

The junior high school staff require a saturated training process in computer-use. It is recommended that this be done during the next year after the district has shown that it is fully committed to further developmental applications of computer-use in the junior high school.

(D) Special Education:

The special education teachers and auxiliary staff have, by far, the greatest on-going access to computers in their own rooms. These machines are, for the most part, being used. However, carefully planned and executed procedures and objectives for their use seem to be missing. Individual teachers are left to develop the uses that they see as most useful.

As a result of these perspectives the following results have appeared:

(i) Special education staff seem frustrated in that their use of computers is not regulated, and they get very little direct help to target educational objectives within their special milieu. Some of the staff expressed interest in bringing their classes to the computer lab but were unable to do this because of scheduling problems. Lab scheduling problems also resulted in students missing work in resource rooms.

(ii) The use of software is controlled by the director who is willing to help, but who has too many other things to do to make this a viable proposition.

(iii) This group shows evidence of software pirating; this is a dangerous procedure and should be discouraged. It is probable that it has developed through a frustration with a lack of funds. The purchasing of special education software should be carefully analyzed for future planning.

(iv) The auxiliary staff would like to use computers but their access to viable software is limited, as is their knowledge of software that is available for their special areas.

(V) Some of the software use is of non-educational games. The use of these software packages is highly suspect, and is often used, it is suspected, for "babysitting".
(vi) The IEPs in Anytown are not standardized. This is a matter of choice, but standardization of these documents and their generation by computer saves time, allows for easier dissemination and analysis, and seems to be more efficient. The administrative analysis will offer a computer alternative to the way in which IEPs are now developed.

It is recommended, therefore, that the special education unit as a whole, in the district, be involved in an in-depth study of computer use and its applications to their areas of expertise. Further, it is suggested that the control of all software be placed in the libraries to mitigate against abuses of the kind described and so that students can have access to it when they have free time in the library. The development of computer use in special education should also, it is suggested, be the domain of the building coordinators. Finally, it is suggested that all the software staff be encouraged to get involved in special computer applications training on an on-going basis.

ADDENDUM

SOFTWARE INFORMATION DISSEMINATION AND PURCHASING

A major district-wide focus should be the dissemination of information about available software, and the process used for purchasing new software.

1. It is suggested that the district coordinators bring out a brief "software newsletter" for staff every three months and that this include full updated lists of available software, reminders about where it is located, and short articles on the software.

2. It is further suggested that a formal purchasing process be implemented which includes the staff through reminders in the newsletter and the dissemination of forms which they can fill out and return if they want software purchased.

3. Finally, it is suggested that staff should be selectively and regularly involved in software information sessions conducted by the coordinators and/or any outside organization to try and keep staff fairly up-to-date. This should be done during school time and take about 1 hour per session.

DISTRICT COORDINATION

The district needs to have a coordinated process to make sure that district objectives are maintained (note that district-wide coordination is an identified item at the start of this report).

The function does not require full-time involvement, but probably does need cross-curricular understanding, and a vision of the "big picture". It is also a focus which would include Special Education computer applications, and the development of, and adherence to, the district computer philosophy.

It is suggested that district coordination would involve also regular meetings of the two building coordinators, together, and helping them establish their functions on a more precise basis within their buildings.

District coordination would mitigate against the kind of disjointed program found at this time in the schools, and the problems related to the lack of incremental developmental planning.

SYNOPSIS OF RECOMMENDATIONS FOR THE 1987/88 YEAR

1. DISTRICT:

(a) The development of a district computer-use philosophy and planning process to be incorporated into the district policy document and to include a software copyright policy.
(b) The active and on-going coordination of district-wide computer applications.
(c) The development of an information dissemination system which might include a regular staff newsletter or news sheet.
(d) The development of a district software purchasing system which would include comprehensive input from staff members.

2. ELEMENTARY SCHOOL:

(a) The suspension of LOGO.
(b) Schedule formalization to allow for the precise correlation between regular class applications and CAI approaches in both formal and requested time.
(c) Hardware reconfigurations:
    (i) Installation of a library carrel - 4 Apples
    (ii) Maintenance of the present lab minus 3 Apples
    (iii) Close supervision of the use of the "floaters"
(d) Software Reorganization:
    (i) Library as "media center"
    (ii) A full set of MECC software and other needed software kept in the library carrel
(e) Involvement of parents in computer developments.
(f) Teacher training to target integration of tool-use and subject-specific software into the process of regular program applications.
(g) Principal commitment on an active, applications basis.
(h) GRADE APPLICATIONS:
    K-2 Computer awareness program
    3-6 Tool-use software use development:
        (i) 2-6 Word Processing
        (ii) 4-6 Data-base usage
    3-6 Keyboarding

3. JUNIOR HIGH SCHOOL:

(a) Eliminate BASIC and Keyboarding.
(b) Reorganize schedule focusing on subject specific and tool use.
(c) Hardware reconfigurations:
    (i) 15 Apples in the lab and enclose space
    (ii) 5+1 Apples in library carrel for private use
    (iii) TRS 80's with disk-drives used for teacher motivation
    (iv) TRS 80's without drives sold or discarded
(d) Software reorganization:
    Development of the library as "media center" - full indexing and control vested in the library system.
(e) Training:
    For science, math, and social studies teachers in teacher utilities and tool use.

(f) GRADE APPLICATIONS:

7th Grade - Introduction to Appleworks as a word processor in conjunction with language arts program. The development of PFS file data base use in social studies.

8th Grade - Expanded Appleworks usage including spread sheet applications and the introduction of the process of integration. The development of PFS file data base use in science.

9th Grade - Appleworks as an integrated system using word processing, spread sheets, and data base applications together to develop comprehensive reports in both science and social studies.

4. SPECIAL EDUCATION:

The development of a comprehensive planning project to help teachers use computers in an objectives-based application.

It should be noted that these changes must be implemented and accepted internally. However, the BOCES and Lower Hudson Regional Computer Center support base is available and will be involved in the process, if requested. The definition of the roles of the support group must be clearly defined by district personnel prior to involvement.

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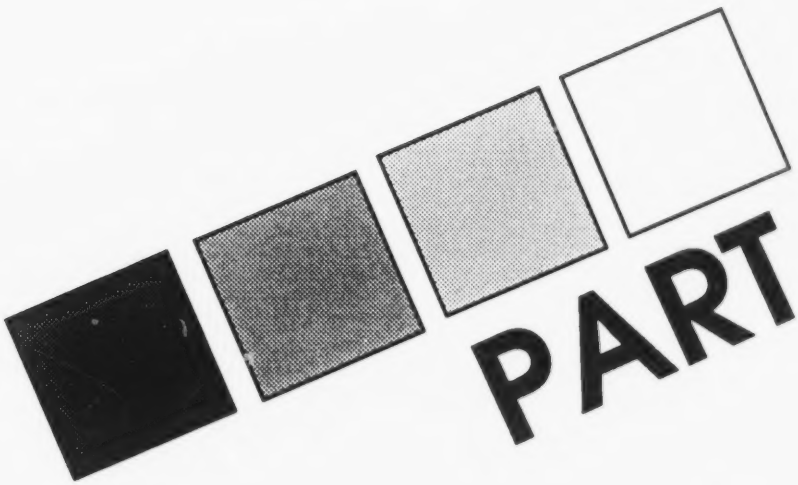


PART FOUR

APPENDICES

APPENDIX E.

Sample Documents

APPENDIX E SAMPLE PLANNING LIST, MEMORANDUM, and STUDENT PERMISSION SLIP

1. ANYTOWN SCHOOL DISTRICT COMPUTER EVALUATION PROCESS LIST

   a. Letter from the committee to the school superintendent outlining the evaluation approach, giving a list of dates when items will be done, and providing a diagrammatic outline of the initial recommended process.

   b. Copy of recommended memorandum which should be sent to all personnel of the school district by the school superintendent.

   c. Request for a meeting between the school superintendent and all school principals to elicit their support and to request that they meet with their school staff to discuss the evaluation process.

   c. Evaluation questionnaire: one for every member of the district personnel including administrators, teachers, and aides.

   d. Item analysis to be used in the five-day, face-to-face, interviews of staff.

2. MEMORANDUM

FROM: THE SCHOOL SUPERINTENDENT
TO: ALL PERSONNEL
SUBJECT: SCHOOL DISTRICT COMPUTER-USE PLANNING

DATE:.....

In (February) of this year your district computer planning committee decided to use the coming year as a planning-and-development year in district-wide computer applications. They also agreed that the district needs help from an objective outside agency to get the best planning results.

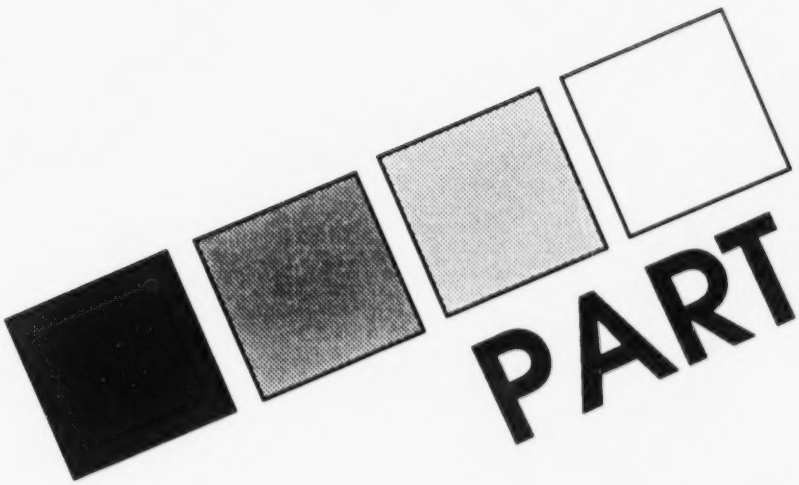
We have agreed to ask..... to help us with this process, and to this end several of their personnel will be visiting to talk with us and to look at computer-use in our schools. You will also be asked to complete a formal questionnaire to begin the process.

Anytown School District has been using computers for nearly ten years now, and it is important to take stock of where we are going in the future so that we remain in the forefront of instructional and administrative applications. I wanted you all to know that your representatives have taken this initiative, and that we are very supportive of the ..... team and their help. Your cooperation in the development of this planning is much appreciated. I will keep you all informed of the dates and times of visits, and of the outcomes of the analyses.

3. PERMISSION SLIP FOR STUDENTS TO BE INTERVIEWED

I (please print).....(Parent/Guardian) give permission for my son/daughter (please print).....(Name) to be interviewed by the computer-use evaluation team during school time for the purpose of helping the school district evaluate the instructional uses of computers currently employed so that improvements to system can be made based on sound feedback from students and staff.

SIGNED.....DATE.....



PART FOUR

APPENDICES

APPENDIX F.

Software Alignment Templates

APPENDIX F.

SOFTWARE ALIGNMENT TEMPLATES

The templates (standard templates on this page, and the MECC software/N.Y.S.E.D. syllabus alignment templates on the following pages) are designed to help districts develop a process of software organization which encourages them to formally integrate their available software into their curriculum applications. The MECC software/N.Y.S.E.D. syllabus alignment is used here because this software is readily available to most school districts in New York State; this is not an official endorsement of the software. (Note: MECC is the official trademark of the Minnesota Educational Computer Corporation, 3490 Lexington Avenue, St. Paul, Minnesota, 55126. Call (612) 481-3500)

SCHOOL DISTRICT COMPUTER-USE EVALUATION PLAN AND THE POSITION OF SOFTWARE AND RELATED TECHNOLOGY

These templates are offered as examples of the ways in which software can be precisely organized around formal curriculum applications. The templates are a beginning. Districts must develop all their curricula with technology applications (including software, described technology applications, laser disk options, and CD-ROM or DV-I options) tightly written in to them; old curricula which do not refer to technology should be discarded or updated.

Records should be maintained of technology use in instruction, and supervisors should be apprised of how to evaluate teachers and instruction based on their use of technology as an integral part of on-going supervision.

Technology changes quickly. Because of this, curricula must be changed and updated on an on-going basis, and at a minimum every three years. Beyond this three-year limit, curricula cease to be applicable, and if both instructional methods using technology, and the technology itself are not regularly adjusted, students may not be getting the education they should be getting.

(A) SYLLABUS SOFTWARE ALIGNMENT TEMPLATE

S.E.D. SYLLABUS & GRADE LEVEL	PAGE REFERENCE	TOPICS	SOFTWARE

(B) DISTRICT CURRICULUM SOFTWARE ALIGNMENT TEMPLATE

LOCAL DISTRICT CURRICULUM OBJECTIVES	LESSON-PLAN NUMBER	SOFTWARE	DATE USED

NEW YORK STATE SYLLABUS/MECC SOFTWARE CORRELATION IDENTIFIER KEY

The correlation matrix (pages 44-49) identifies the correlation between particular software programs and the New York State Syllabi by identifier # (the number preceded by [S]) and by page #[P]

IDENTIFIER #	SYLLABUS/GUIDE TITLE
1	Mechanical Drawing and Design
2	Developing Keyboarding Skills
3	Toward Civic Responsibility
4	Music K-6
5	Health Education Syllabus K-12
6	Tobacco Education Curriculum (Multiple Booklets)
7	Health Education: Physical Dimension of Health Nutrition Education Grades 4-6
8	Health Education: Physical Dimension of Health Nutrition Education Grades 10-12
9	Composition With English Language Arts
10	English Language Arts
11	Toward Computer Literacy
50	Mathematics K-6 Syllabus
51	Mathematics 7 Syllabus
52	Mathematics 3-year Sequence For High Schools I
53	Mathematics 3-year Sequence For High Schools II
54	Mathematics 3-year Sequence For High Schools III
55	Graphs And Statistics
56	Problem Solving
57	Teaching Math With Computers K-8
59	Science Syllabus For Middle And Junior High Schools (F): Astronomy and Aerospace
60	General Biology Syllabus
61	Elementary Science Syllabus K-6
62	Science Syllabus For Middle And Junior High Schools (B): Human Systems
63	Science Syllabus For Middle And Junior High Schools (D): Earth's Changing Surface
64	Regents Biology Syllabus
65	Regents Earth Science Syllabus
66	Earth Science
67	Regents Chemistry
68	Physics
69	General Chemistry
70	7 And 8 Social Studies: United States And New York State History
71	11 Social Studies: United States History And Government
72	12 Social Studies: Economics And Economic Decision Making
73	K-6 Social Studies Program (Multiple Booklets)
75	An Environmental Syllabus
76	9 And 10 Social Studies: Global Studies

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BOCES Regional Computer Center 1987-88

CURRICULUM AREA	SUBJECT	TOPIC	GRADE LEVEL	Title	NYSED SYLLABUS #/PAGE #
Art,Industrial Arts Business Education	Drafting, Solid Geometry, Art	One- and Two-Point Perspective	7 8 9 10 11 12	Art	S1,P21
	Accounting	Automated Accounting	11 12	Business Vol.3 (Business Educ.& Acctg)	
	Business Education	Payroll Processing	9 10 11 12	Payroll Systems: A Business Simulation	
	Business Education, Economics	Personnel, Payroll, Tax	9 10 11 12	Business Vol. 2	
		Savings Interest, Installment Loans, Payroll	9 10 11 12	Business Utilities	
	Business Education,Economics	Business Competition, Savings Interest, Installment Loans, Payroll	9 10 11 12 A	Business Vol. 1	S72,P33
	Data Entry	Spreadsheets	9 10 11 12	Electronic Spreadsheet(teacher) Requires Visicalc	
Computer Literacy	Apple II Plus, //e	Letter Recognition, Keyboard, Computer Art	K 1 2 3 4 5 6	The Friendly Computer	
	Computing and Information	Keyboarding Techniques	4 5 6	Keyboarding Primer: Student Program	S2
		Keyboarding Techniques	4 5 6	Keyboarding Primer: Teacher Utilities	S2
		Keyboarding Techniques	4 5 6 7 8 9	Keyboarding Master: Games & Drills (student)	S2
		Keyboarding Techniques	4 5 6 7 8 9	Keyboarding Master: Games & Drills (Teacher Utilities)	S2
		Keyboarding Techniques	4 5 6 7 8 9	Keyboarding Master: Paragraph Practice (student)	S2
		Keyboarding Techniques	4 5 6 7 8 9	Keyboarding Master: Paragraph Practice (Teacher Utilities)	S2
		Retrieving Information from a Database	7 8 9	Trivia Machine: Data Diskette	
		Retrieving Information from a Database	7 8 9	Trivia Machine: Program Diskette	
	Database Reading	Books, Databases	3 4 5	Book Worm	
	Databases	Database Design and Use	6 7 8 9	Create-A-Base	
	Multidisciplinary	Database Use, Word Processing	7 8 9	Stuff & Fetch	
	Social Studies	Government and Information	7 8 9	Computers in Government	S3,P148
Computer Science	BASIC Programming	High-Resolution Graphics	Intermediate Programming	Shape Tables	
		High-Resolution Text Printing; Input Processing; Editing Disk Files; Sorting	Intermediate, Advanced Programming	Programmers Aid Vol. 2	
		Programming Utility	9 10 11 12	MECC Hi-Res Toolkit	
		Structured Programming; Formatted Output	Intermediate, Advanced Programming	Extensions to Applesoft BASIC	
	Computer Literacy, Problem Solving	Problem Solving, Patterns, Shapes, Logic, Sequence, Left and Right, Estimating Distance and Degrees, Symmetry, Keyboard Familiarity	K 1 2 3	EZ Logo	
	Computer Programming	FOR/NEXT,READ/DATA	6 7 8 9	Loops	
		Programming in the BASIC Language	9 10 11 12	Intro to Applesoft BASIC (Answers)	
		Programming, Using Files in the BASIC Language	9 10 11 12	Files on the Apple	
	Computer Science	Computer Programming, Algorithms	9 10 11 12	Exploring Sorting Routines	

50

51

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BOCES Regional Computer Center 1987-88

CURRICULUM AREA	SUBJECT	TOPIC	GRADE LEVEL	Title	NYSED SYLLABUS #/PAGE #
Computer Science	Computer Science, Computer Literacy	Computers, Programming, BASIC	6 7 8 9 10 11 12 A	The Three R s of Microcomputing (The Glass Computer)	
	Computer Science, Computer Programming	Programming in Pascal	7 8 9 10 11 12	Pascal Learning Aids (requires Pascal)	
	Computer Studies, Computer Programming	Writing Computer Procedures, Logical Thinking	6 7 8 9	Experiencing Procedures	
	Programming	Branching in BASIC, IF/THEN and GOTO	6 7 8 9	The Ifs and Thens of Programming	
		Maze-Solving Algorithms	7 8 9 10 11 12	Mouse in the Maze	
		Programming Commands	6 7 8 9	Programming Special Projects	
	Word Processing	Entering, Editing and Formatting Text	6 7 8 9	Processing Words	
Fine Arts	Music	Music Theory, Aural Training, Rhythm	Beginning-Advanced Music Students	Music Theory	S4
Foreign Language, Language Arts, Mathematics	Reading, Mathematics	Letter Sequencing, Memorization, Counting	K 1 2	Preparation ala Lecture et a L addition	
Health and Nutrition	Foods	Food Analysis	7 8 9 10 11 12 A	Nutrition Vol. 2	S5,P22
	Health Maintenance	Smoking and Health	7 8 9 10 11 12	Smoking: It's Up to You	S6,S5,P32
		Sodium in the Diet	6 7 8 9 10 11 12 A	Salt and You	S5,P22
	Health Sciences	Lifestyle Health Risk, Ideal Weight	9 10 11 12 A	Health Maintenance Vol. 2	S5,P18
	Nutrition	Caloric Intake, Risk of Heart Attack, Value of Nonnutrients, Poisonous Substances	7 8 9 10 11 12 A	Health Maintenance Vol. 1	S5,P28
		Food Intake Analysis	7 8 9 10 11 12 A	Nutrition Vol. 1	S5,P22
		Nutrients, Calories	5 6	Elementary Vol.13 (Elem. Nutrition)	S7,P40
		Nutrients, Diet, Food Composition	6 7 8 9 10 11 12 A	Food Facts	S8,P31
Interdisciplinary	Computing and Information	Databases	6 7 8 9 10 11 12	Databases in the Classroom: Dataquest Sampler	
		Databases	6 7 8 9 10 11 12	MECC Dataquest: Composer	
	Language Arts	Word Games	1 2 3 4 5 6	Elementary Volume 2	
	Problem Solving	Using Computers to Solve Problems	7 8 9 10 11 12	Information Manager	S56
Language Arts	Composition	Writing Revision	7 8 9 10 11 12	Editor	S9,P12
		Writing Revision	7 8 9 10 11 12	Ghost Writer (128k)	S9,P12
		Writing Revision	7 8 9 10 11 12	Ghost Writer (64k)	S9,P12
	Creative Writing	Pre-writing	9 10 11 12	Writing a Character Sketch	S9,P7
		Pre-writing, Writing a Narrative, Establishing the Narrator	7 8 9	Writing a Narrative	S9,P43
	Drama	Writing a Play	6 7 8 9	Show Time Demo Disk	S9,P43
		Writing a Play	6 7 8 9	Show Time Program Disk	S9,P43
	English Grammar	Parts of Speech	11 12 A	English Vol. 1	S10,P42
	Pre-Reading	Letter Discrimination; Alphabet Sequence; Upper-and Lower-Case Matching	K	Fun From A to Z	
	Reading	Letter/Sound Association	K	First-Letter Fun	
		Personalized Stories	1 2 3	Student Stories	
		Prefixes	2 3	Elementary Volume 5	S10,P5
		Vocabulary	K 1 2	Paint with Words	
		Vocabulary	K 1 2	Paint with Words (Word Art Show)	
	Reading Comprehension	Reading for Detail and Sequence; Choosing Reading Strategies	4	Those Amazing Reading Machines II	
	Spatial Relationships	Left and Right Directions	K 1 2	Right of Way	

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CURRICULUM AREA	SUBJECT	TOPIC	GRADE LEVEL	Title	NYSED SYLLABUS #/PAGE #
Language Arts	Spelling	Drill and Practice	1 2 3 4 5 6	Word Wizards	
		Drill and Practice	1 2 3 4 5 6 7 8 9 10 11 12 A	Master Spell	
		Vocabulary	1 2 3 4 5 6	Spelling Vol. 1	
		Vocabulary	6 7 8 9 10 11 12 A	Spelling Vol. 2	
	Spelling, Vocabulary	Confusing Word Pairs	7 8 9	Word Herd: Look-Alikes	
		Homonyms	7 8 9	Word Herd: Sound-Alikes	
	Vowels	Vowel Discrimination	1 2 3	Word Munchers	
	Word Processing	Word Processor Uses	6 7 8 9 10	Write Start	
	Writing	Pre-writing	10 11 12	Writing an Opinion Paper	S9,P7
		Proofreading	6 7 8 9 10	Speller: Dictionary Diskette	S9,P14
		Proofreading	6 7 8 9 10	Speller: Program Diskette	S9,P14
		Word Processing	6 7 8 9 10 11 12 A	Writer	S9,P11
Language Arts, Mathematics	Alphabet, Counting	Upper and Lower Case Alphabet, Counting Identical Objects	K 1	Elementary Vol. 7	
Language Arts, Reading	Phonics	"R-controlled" Vowels, Diphthongs and "Rule-Breaking" Long and Short Vowels	1 2 3	Phonics Prime Time: Vowels II	
		Blends and Digraphs	1 2 3	Phonics Prime Time: Blends & Digraphs	
		Final Consonants	K 1 2	Phonics Prime Time: Final Consonants	
		Initial Consonants	K 1	Phonics Prime Time: Initial Consonants	
		Long and Short Vowels	1 2	Phonics Prime Time: Vowels I	
	Reading Comprehension	Reading for Detail and Sequence; Choosing Reading Strategies	3	Those Amazing Reading Machines I	
		Reading for Detail and Sequence; Choosing Reading Strategies	5	Those Amazing Reading Machines III	
		Reading for Detail and Sequence; Choosing Reading Strategies	6	Those Amazing Reading Machines IV	
	Word-Building Skills	Compound Words	3 4 5 6	Words at Work: Compound It'	
		Contractions	2 3 4	Words at Work: Contraction Action	
		Prefixes	3 4 5 6	Words at Work: Prefix Power	
		Suffixes	3 4 5	Words at Work: Suffix Sense	
Mathematics	Algebra	Plotting Algebraic Equations	9 10 11 12	Equation Math	S52,P10
	Algebra, Geometry, Trigonometry	Cartesian Coordinates, Graphing Quadratics and Conics, Parametric Equations	11 12	Math Vol. 4	S53,P31
	Arithmetic	Basic Facts	1 2 3 4 5 6	Speedway Math	S50
		Basic Math Operations for Whole Numbers	K 1 2 3 4 5 6	Path Tactics	S50
		Comparing Fractions	5 6 7 8	Adventures with Fractions	S50,S51
		Counting	K 1	Counting Critters	S50,P3,P7
		Elementary Arithmetic	3 4 5	Elementary Vol. 1	S50
		Elementary Arithmetic in Spanish	3 4 5	Spanish Math Practice	
		Fractions	3 4 5	Fraction Concepts, Inc.	S50
		Fractions	3 4 5 6 7 8 9 10 11 12 A	Fraction Munchers	S50,S51
		Fractions	4 5 6	Fraction Practice Unlimited	S50
		Ordering Fractions	5 6 7 8	Growgins' Fractions	S50,S51
		Whole Number Operations	3 4 5 6	Conquering Whole Numbers	S50,P25
		Whole-Number Addition	1 2	Early Addition	S50,P9,P16
		Whole-Number Addition	3	Addition Logician	S50,P25

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BOCES Regional Computer Center 1987-88

CURRICULUM AREA	SUBJECT	TOPIC	GRADE LEVEL	Title	NYSED SYLLABUS #/PAGE #
Mathematics	Arithmetic	Whole-Number Division	4	Quotient Quest	S50,P26
		Whole-Number Multiplication	3 4	Multiplication Puzzles	S50,P26
		Whole-Number Operations	1 2 3 4	Mastering Math - Diagnostic	S50,P7,P16,P25
		Whole-Number Operations	K 1 2 3 4	Mastering Math - Management	S50,P7,P16,P25
		Whole-Number Operations	K 1 2 3 4	Mastering Math - Worksheet	S50,P7,P16,P25
		Whole-Number Subtraction	1 2 3	Space Subtraction	S50,P7,P16,P25
		Whole-Number Subtraction	3	Subtraction Puzzles	S50,P25
	Arithmetic, Measurement, Numeration	Addition, Subtraction, Length, Perimeter, Ones and Tens Digits	K 1	Arithmetic Critters	S50,P4
	Basic Math Skills	Multiples, Factors, Addition, Subtraction, Multiplication, Division, Prime Numbers, Equality, Inequality	3 4 5 6 7 8 9 10 11 12 A	Number Munchers	S50,P3,P7,P15,P25,P35,S51,S52,S53,S54
	Computer Graphics, Graphing	Use of Ordered Pairs in Graphing and in Graphics	6 7 8 9	Graphing	S55,S50,P48,P61,S52,P17,S53,P38,S54,P24
	Conics and Curves	Conic Sections, Ellipses, Constructional Geometry	5 6 7 8 9 10 11 12	Aestheometry	S50,P53,P63,S51,P72,S52,P29,S53,P29,S54,P15
	Coordinate Geometry, Algebra	Logic, Solving Equations, Graphing Equations and Functions on Rectangular and Polar Coordinate Systems	7 8 9 10 11 12	Math Vol. 1	S51,P7,P54,S52,P29,S53,P31,S54,P15
	Decimals, Percentages	Arithmetic Applications	7 8 9	Automotive Math Vol. 2	S51,P33,P37
	General Math	Estimation of Whole and Decimal Numbers; Rounding; Truncating	6 7 8 9	Estimation	S50,P55,S51,P37
	Geometry	Lines, Triangles	5 6	Elementary Vol. 9	S50,P53,P63
		Points, Lines, Line Segments, Angles	3 4 5	Elementary Vol. 8	S50,P32,P42,P53
	Geometry, Measurement	Quadrilaterals, Area and Perimeter	4 5 6	Elementary Vol. 10	S50,P42,P53,P63
	Graphing	Analysis and Construction	7 8 9	Graphing Primer	S55
		Cartesian Coordinate System	4 5 6 7 8 9 10 11 12	Coordinate Math	S50,P44,P54,P60,S52,P29
		Graphing Utility	7 8 9	Graph	S55
	Mathematics	English Measurement System	7 8	Math Vol. 2	S51,P15,P72
		Prime Numbers, Factoring	7 8 9	Prime Numbers	S51,P15
		Whole-Number Addition	2 3	Circus Math	S50,P16,P25
	Measurement	Time	1 2 3	Clock Works	S50,P14,P32
	Money	Money Recognition and Counting; Making Change; Exchange Rates	1 2 3 4	Money Works	S50,P8,P16,P30
	Plane Geometry	Perimeter, Area	6 7 8	Math Vol. 3	S50,P63,S51,P72
	Problem Solving	Problem-Solving Strategies including Trial and Error, Exhaustive Listing, and Simplifying the Problem	6 7 8 9	Problem-Solving Strategies	S50,P56,S56,S51,P9
	Programming, Mathematics	Probability	6 7 8 9	Probability	S51,P42,S52,P17
	Teacher Utility	Problem Solving	3 4 5 6 7 8	Computer Generated Math Materials Vol. 1	S56,S50,P1
		Problem Solving	3 4 5 6 7 8	Computer Generated Math Vol. 2	S56,S50,P1
	Whole Numbers, Fractions	Arithmetic Applications	7 8 9	Automotive Math Vol. 1	S51,P15
Mathematics, Computer Science, Computer Literacy	Mathematics, Computer Science, Computer Literacy	Number Systems	6 7 8 9	Number Systems	S57,S51,P61
Mathematics, Foreign Language	General Math		2 3 4 5 6	Jeux Mathematiques Classiques	
Mathematics, Science	Using Computing Tools	Spreadsheets	6 7 8 9 10 11 12	Spreadsheets for Math & Science: Appleworks Sampler	S57,P37

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MECC Software for the Apple
BOCES Regional Computer Center 1987-88

CURRICULUM AREA	SUBJECT	TOPIC	GRADE LEVEL	Title	MYSED SYLLABUS #/PAGE #
Music, Art	Music, Art	Composing Tunes; "Drawing with Sound"	K 1 2 3 4 5 6	Sound Tracks	S4
Problem Solving	Problem Solving	Scientific Method and Process	7 8 9 10 11 12	Zoyon Patrol	S56
		Scientific Method and Process	7 8 9 10 11 12	Zoyon Patrol	S56
Science	Astronomy	Observation of Constellations, Planets and Halley's Comet	7 8 9	Sky Lab	S59
	Biology	Cellular physiology	10 11 12	Science Vol. 2	S60,P4
	Biology, Ecology	Food Chains, Predator/Prey Relationships	4 5 6	Odell Lake	S61,S62,S63,S64,S65,S66
	Circuits	Logical Thinking	10 11 12	Logic Gates	
	Computer Literacy, Home Economics	Nutrition, Data Handling	6 7 8 9	Nutrition and Food Groups	
	Earth/Life Science	Circulation, Mineral Identification, Food Chains, Earthquakes, Stars	4 5 6 7 8 9 10 11 12	Science Vol. 2 (Earth & Life Science)	S61,S62,S63,S64,S65,S66
	Energy Use	Energy Conservation	4 5 6 7 8	Energy House	S61,S62,P7
	Genetics	Inherited Characteristics	6 7 8 9	Genetics	S60,P45
	Modeling	Modeling; Model Design and Restrictions; Experimental Methods	6 7 8 9	Modeling	
	Physics, Chemistry	Solubility, Volume/Temperature Relationship, Electronic Charge	11 12	Science Vol. 4	S66,S67,S68,S69
	Science	Animal Life, Responsible Pet Care	5 6 7 8 9	Pets, Ltd.	
		Biology, Experimental Method	6 7 8 9	Discovery Lab	S61
		Migratory Waterfowl Hunting	7 8 9 10 11 12 A	Ducks	S75
	Taxonomy	Classifications, Database Management	6 7 8 9	Classification	S61
Science, Mathematics	Problem Solving	Problem-Solving Strategies, Following Instructions, Language Encoding/Decoding	6 7 8 9	Mind Puzzles	S56
Social Studies	American History	The Overland Trail to Oregon in 1848	5 6 7 8 9 10 11 12 A	The Oregon Trail	S70,S71
	American Presidents, Managing Information	Information Retrieval	7 8 9 10 11 12	Data Quest: Introduction & Report Retrieval	S70,S71
		Information Retrieval	8 9 10 11 12	Data Quest: The Presidents	S70,S71
	Economics	Money, Budgeting, Computers in Society	6 7 8 9 10 11 12	Electronic Money	S72,S73
		Price, Income	3 4 5 6	The Market Place	S70,S71,S73,S74
	History, Geography	Decision Making, Problem Solving, Map Reading, Government, Economics	3 4 5 6 7 8	Elementary Vol. 6	S70,S71,S73,S74
	History, Government	The U.S. Constitution	9 10 11 12	To Preserve, Protect and Defend	S70,S71,S73,S74
	History, Marketing, Geography	Civil War Strategy; Business/Marketing Concepts; State Shapes, Locations and Capitals	3 4 5 6 7 8 9	Elementary Volume 3	S73
	Maps	Map-reading Skills	4 5 6	Jenny's Journey	S73,P32
	Political Polls	Political Polls; Designing, Taking, and Analyzing Polls; the Use of Computers in the Political Process	6 7 8 9	Polls and Politics	S3,P136
	Social Problems, Economics, Biology	Community Decision-Making, Local Government, Ecology	5 6 7 8 9	Oh,Deer!	S75,P44
	U.S. States, Managing	Information Retrieval	5 6 7 8 9 10 11	MECC Dataquest: The Fifty States	S70,P115

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CURRICULUM AREA	SUBJECT	TOPIC	GRADE LEVEL	Title	NYSED SYLLABUS 0/PAGE 0
Social Studies	Information				
	World Geography, Managing Information	Information Retrieval	7 8 9 10 11 12	MECC Dataquest: The World Community	S76,S73,P30
Special Education	Arithmetic, Science, Music	Basic Arithmetic, Money, Food Chain, Pitch Patterns	2 3 4 5 6. Motor-Impaired Students	Special Needs Vol. 2	
	General Math	Logic, Problem Solving, Ordering of Numbers, Locating Points	6 7 8 9	Guessing and Thinking	
	Language Arts	Spelling Words; Words in Context	2 3 4 5 6	Special Needs Vol. 1	
Teacher Utility	Multidisciplinary	Class List Management	A	Labels, Letters & Lists	
		Computing Grades	A	Grade Manager	
		Creating Drill and Practice Materials	A	Quickflash	
		Data Management	A	Data Handler	
		Question Generation	A	Study Guide	
		Word Puzzles, Mazes, Banners, Posters	A	Puzzles and Posters	
	Physical Education	Basketball Statistics	A	Basketball Statistics	
		Wrestling Statistics	A	Wrestling Statistics	
	Record-Keeping	Student Health Records and Reports	A	Health Immunization Record Keeping	
	Statistics	Sports Statistics	Coaches, Statisticians	Sports Stats	
Teacher Utility, Foreign Language	French	Question Generation	A	Teaching Assistant (French Version)	
	Multidisciplinary	Utility	K 1 2 3 4 5 6 7 8 9 10 11 12 A	El Asistente Del Instructor	
Training			A	Computers in Teaching - Vol. 1	
			A	Computers in Teaching - Vol. 2	
	Appleworks	Word Processing, Database, Spreadsheet and Integration	A	Computing Tools: Appleworks	
	Programming	Assembly Language	A	Apple Assembly Language	
		CALLS,PEEKS and POKES; Subscripted Variables and Random Access and Sequential Files	A	Advanced Applesoft BASIC	
		LOGO	A	Intro to LOGO for Teachers	
		LOGO	A	Logo, Words and Ideas	
		PASCAL	A	Intro to PASCAL for Programming Teachers	
		Printing, Variables, Repeating, Making Decisions and Accumulators	A	Beginning Applesoft BASIC	
		Program Planning and Design	A	Structured Design & Programming: Basic Files	
		Program Planning and Design	A	Structured Design & Programming: Fortran Files	
		Program Planning and Design	A	Structured Design & Programming: Pascal 1.1 Files	
	Software demonstration	Types of software	A	Mecc Apple Demonstration Disk	
	Writing	Pre-writing, Drafting, Editing	A	Teaching Writing with a Word Processor	
		Teaching Writing with a Computer	A	Teaching Writing with a Computer: Tools & Strategies	

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